

microfabricated elements, said elements including a first reagent chamber for containment of a first one of said reagents, and a means for manipulation of a parameter of said reaction] at least one chemical reaction, comprising:

a) an array of chambers for containment of the reaction including:

at least one chamber for preparing a sample for use in said reactions; at least one chamber for adding or removing reagents involved in said reactions;

at least one channel interconnecting said chambers;

b) a temperature controller of said reaction; and

c) a product analysis chamber coupled to and adapted to perform analysis of said reaction.

Please cancel claims 2-92.

Please add the following new claims:

--93. The instrument of claim 1, wherein said means for analysis is selected from the group consisting of: sequencing of target species, DNA fingerprinting, physical mapping of target species, DNA library analysis, electrochemical detection, and hybridization detection.

94. The instrument of claim 1, wherein said sample is selected from the group consisting of: intact cells, fixed cells, lysed

cells, microorganisms, and tissue.

95. The instrument of claim 94, wherein sample preparation yields a specific nucleic acid target molecule.

96. The instrument of claim 1, wherein said sample preparation includes sorting specific cell types.

97. The instrument of claim 1, wherein said chambers are constructed on a single substrate.

98. The instrument of claim 1, wherein said reaction is controlled at a constant temperature.

99. The instrument of claim 98, wherein said reaction is in vitro transcription.

100. The instrument of claim 1, wherein said reaction is controlled by thermal cycling.

101. The instrument of claim 100, wherein said reaction is a chain reaction.

102. The instrument of claim 101, wherein said reaction is a polymerase chain reaction.

103. The instrument of claim 101, wherein said reaction is a

ligase chain reaction.

104. An instrument for controlling at least one chemical reaction, comprising:

a) an array of chambers for containment of the reaction including:

at least one chamber for preparing a sample for use in said reactions;

at least one chamber for adding or removing reagents involved in said reactions;

at least one channel interconnecting said chambers;

a transferring mechanism coupled to said chambers by way of said channel;

b) a temperature controller coupled to said instrument;

c) at least one chamber for analysis of products of said at least one chemical reaction.

105. The instrument of claim 104, wherein said means for analysis is selected from the group consisting of: sequencing of target species, DNA fingerprinting, physical mapping of target species, DNA library analysis, electrochemical detection, and hybridization detection.

106. The instrument of claim 104 in which said means for analysis utilizes a predetermined array of oligonucleotides.

107. The instrument of claim 106 in which said array is used in hybridization techniques.

108. The instrument of claim 104, wherein said means for analysis includes purification of said reaction products.

109. The instrument of claim 108, wherein said purification is performed by electrophoresis.

110. The instrument of claim 108, wherein said purification is performed by chromatography.

111. The instrument of claim 104, wherein said sample is selected from the group consisting of: intact cells, fixed cells, microorganisms, and tissue.

112. The instrument of claim 111, wherein sample preparation yields a specific nucleic acid target molecule.

113. The instrument of claim 104, wherein said sample preparation includes sorting specific cell types.

114. The instrument of claim 104, wherein said chambers are constructed on a single substrate.

115. The instrument of claim 104, wherein said reaction is controlled at a constant temperature.